AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listing of claims in the application.

Listing of Claims

1-10   (Cancelled)

11.   (Currently Amended) A computer system comprising:

a host computer; and

a storage system storing data accessed by said host computer;

wherein said storage system includes a first physical storage area in a disk in said storage system, a second physical storage area in a disk in said storage system, and a controller accessing a disk in said storage system,

wherein said first physical storage area corresponds to a first logical volume composed of a plurality of continuous logical tracks accessed by said host computer and said host computer stores backup data in said second physical storage area corresponding to a second logical volume of the same amount of continuous logical tracks as the first logical volume, said backup data is data stored in said first physical storage area at a certain time,

after said certain time, said controller updates data stored in said first physical storage area according to an access request to said first logical volume from said host computer,

said host computer sends a swap request to said storage system upon occurrence of a failure in a sequence of processing executed by said host computer, and

said controller relates said second logical volume in said second physical storage area to said first logical volume in said first physical storage area according to said swap request by exchanging positional information with each other, so that said controller accesses said second

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logical volume in said second physical storage area when said controller receives an access request to said first logical volume from said host computer.

12.   (Previously Presented)   A computer system according to claim 11,

wherein before receiving said swap request, said controller relates an ID of said first logical volume to an ID of said first physical storage area and accesses said first physical storage area according to an access request including said ID of said first logical volume received from said host computer, and

after receiving said swap request, said controller relates an ID of said first logical volume to an ID of said second physical storage area, and accesses said second physical storage area according to an access request including said ID of said first logical volume received from said host computer.

13.   (Previously Presented)   A computer system according to claim 11
wherein said backup data is stored in a tape medium, and
said host computer stores said backup data from said tape medium to said second physical storage area.

14.   (Previously Presented)   A computer system according to claim 11,
wherein said storage system includes plural first physical storage areas, each of which corresponds to a first logical storage area in said first logical volume, and plural second physical storage areas, each of which corresponds to one of said plural first physical storage areas,

said controller stores backup data in said plural second physical storage areas, backup data stored in a second physical storage area is data stored in a first physical storage area corresponding to said second physical storage area at a certain time,

according to said swap request, said controller relates one of said plural second physical storage areas to a first logical storage area which corresponds to a first physical storage area corresponding to said one of said plural second physical storage areas, so that said controller accesses said one of said plural second physical storage areas when said controller receives an access request to said first logical storage area.

15.   (Previously Presented)   A computer system according to claim 14,

wherein before receiving said swap request, said controller relates an ID of said first logical volume to IDs of first logical storage areas and IDs of said plural first physical storage areas and accesses one of said plural first physical storage areas according to an access request including said ID of said first logical volume and an ID of a first logical storage area, and

after receiving said swap request, said controller relates said ID of said first logical volume to said IDs of said first logical storage areas, an ID of at least one of said plural first physical storage areas, and an ID of said one of said plural second physical storage areas, and accesses said one of said plural second physical storage areas according to an access request including said ID of said first logical volume and an ID of a first logical storage area corresponding to said ID of said one of said plural second physical storage areas.

16.   (Currently Amended) A storage system coupled to a computer, comprising:

at least one disk,

a controller coupled to said at least one disk;

a first physical storage area in at least one disk; and

a second physical storage area in at least one disk;

wherein said first physical storage area corresponds to a first logical volume composed of a plurality of continuous logical tracks accessed by said computer,

backup data is stored in said second physical storage area corresponding to a second logical volume of the same amount of continuous logical tracks as the first logical volume, said backup data is data stored in said first physical storage area at a certain time,

after said certain time, said controller updates data stored in said first physical storage area according to an access request to said first logical volume from said host computer,

said host computer sends a swap request to said storage system upon occurrence of a failure in a process executed by said host computer, and

said controller relates said second logical volume in said second physical storage area to said first logical volume in said first physical storage area according to said swap request by exchanging mapping information with each other, so that said controller accesses said second logical volume in said second physical storage area when said controller receives an access request to said first logical volume.

17.   (Previously Presented)   A storage system according to claim 16,

wherein before receiving said swap request, said controller relates an ID of said first logical volume to an ID of said first physical storage area, and accesses said first physical storage area according to an access request including said ID of said first logical volume received from computer, and

after receiving said swap request, said controller relates an ID of said first logical volume to an ID of said second physical storage area and accesses said second physical storage area according to an access request including said ID of said first logical volume received from said computer.

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18.   (Previously Presented)   A storage system according to claim 16, wherein said backup data is stored from tape medium to said second physical storage area according to an operation of said computer.

19.   (Previously Presented)   A storage system according to claim 16,

wherein said storage system includes plural first physical storage areas, each of which corresponds to a first logical storage area in said first logical volume, and plural second physical storage areas, each of which corresponds to one of said plural first physical storage areas,

said controller stores backup data in said plural second physical storage areas, backup data stored in a second physical storage area is data stored in a first physical storage area corresponding to said second physical storage area of a certain time,

according to said swap request, said controller relates one of said plural second physical storage areas to a first logical storage area which corresponds to a first physical storage area corresponding to said one of said plural second physical storage areas, so that said controller accesses said one of said plural second physical storage areas when said controller receives an access request to said first logical storage area.

20.   (Previously Presented)   A storage system according to claim 19,

wherein before receiving said swap request, said controller relates an ID of said first logical volume to IDs of first logical storage areas and IDs of said plural first physical storage areas and accesses one of said plural first physical storage areas according to an access request including said ID of said first logical volume and an ID of a first logical storage area, and

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after receiving said swap request, said controller relates an ID of said first logical

volume to said IDs of said first logical storage areas, an ID of at least one of said plural first

physical storage areas, and an ID of said one of said plural second physical storage areas, and

accesses said one of said plural second physical storage areas according to an access request

including said ID of said first logical volume and an ID of a first logical storage area

corresponding to said ID of said one of said plural physical second storage areas.

21.   (Currently Amended) A storage system coupled to a host computer, comprising:

        at least one disk;

        a first physical storage area in said at least one disk, said first physical storage area is

included in a logical volume composed of a plurality of continuous logical tracks accessed by

said host computer,

        a second physical storage area included in logical volume composed of a plurality of

continuous logical tracks in said at least one disk; and

        a controller coupled to said at least one disk;

        wherein backup data is stored in said second physical storage area, said backup data is

data stored in said first physical storage area at a certain time, and

        wherein said controller accesses said first physical storage area according to an access

request to said logical volume received from said host computer, and

        after said controller receives a swap request from said host computer, said controller

accesses said second physical storage area according to an access request to said logical

volume received from said host computer by exchanging positional information between said

first physical storage area and said second storage area with each other.

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22.   (Previously Presented)   A storage system according to claim 21, wherein said controller relates an ID of said logical volume to an ID of said second physical storage area according to said swap request, so that said controller accesses said second physical storage area when said controller receives an access request including said ID of said logical volume after receiving said swap request.

23.   (Previously Presented)   A storage system according to claim 22, wherein said backup data is stored from a tape medium to said second physical storage area.

24.   (Currently Amended) A storage system coupled to a computer, comprising:

at least one disk;

first physical storage areas in said at least one disk, said first physical storage areas are included in a logical volume composed of a continuous plurality of logical tracks accessed by said computer.

second physical storage areas included in a logical volume composed of a continuous plurality of logical tracks in said at least one disk; and

a controller coupled to said at least one disk;

wherein backup data is stored in said second physical storage areas, said backup data is data stored in said first physical storage areas at a certain time, and

wherein said controller accesses one of said first physical storage areas according to an access request to said logical volume received from said computer, and

after said controller receives a swap request from said computer, said controller accesses one of said second physical storage areas according to an access request to a partial logical storage area in said logical volume received from said computer and accesses one of said first physical storage areas according to an access request to another partial logical storage

area in said logical volume received from said computer by exchanging positional information between said partial logical storage area and said another partial logical storage area with each other.

25.   (Previously Presented)   A storage system according to claim 24, wherein said swap request includes an ID of said logical volume and an ID of said partial logical storage area in said logical volume, and said controller relates said logical volume to one of said second physical storage areas corresponding to said partial logical storage area, so that said controller accesses said one of said second physical storage areas according to an access request to said partial logical storage area in said logical volume.

26.   (Previously Presented)   A storage system according to claim 25, wherein said controller relates an ID of said partial logical storage area to an ID of said one of said second physical storage areas according to said swap request, so that said controller accesses said one of said second physical storage areas according to an access request including said ID of said partial logical storage area.